Putting Research to Work

RD&T E-Newsletter, April 2004

Technical information for state DOT highway professionals

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WisDOT RD&T Home

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Research World

Japan Looks to Missouri For Best in Public Involvement

A Japanese delegation of transportation officials recently visited Missouri to learn firsthand how public involvement is helping the Missouri DOT improve Interstate 70. The officials are also visiting major transportation projects in Boston, Oak Park, Mich., and San Francisco to see what techniques can be applied to Japan's largest highway project -- a 10-mile, tunneled highway section of a ring road, which passes through Tokyo suburbs.
http://www.modot.mo.gov/newsandinfo/newsreleases/january-2004/japanese1.htm

Danish Company A Leader In GPR For Transportation

Roadscanners, a Danish GPR consulting company, leads the field in developing GPR uses on transportation infrastructure, has worked with several state DOTs, including Texas and Minnesota, and has a representative on the panel of the AASHTO Technology Implementation Group for GPR. Its useful site includes descriptions of the latest research on GPR use.
http://www.roadscanners.com/index.php3?linkki=roadscanners&kieli=eng.

Brighter LEDs for Traffic Lights in the Netherlands

A new type of LED traffic light is making its debut in the Netherlands. Brighter than the current lights, the new signals contain between 200 and 400 light emitters and do not require the conventional hood to shade them from the sun. The lightweight new lights use 80 percent less power than current traffic signals, and the LED displays are estimated to last for 10 years without needing replacement. See http://www.itsinternational.com/news/article.cfm?recordID=5758.

Danes Find Portable FWDs Useful In Subgrade Evaluation

The latest issue of *Nordic Road and Transport Research* reports on a Danish study of three portable falling weight deflectometers. Researchers concluded the portable FWDs work effectively in measuring subgrade soils and sub-base materials, and in places where conventional FWDs cannot be used. See http://www.vti.se/nordic/3-03mapp/comparison.html. (Courtesy TRB E-Newsletter.)

The Innovative 'Traffic Message Channel'

TMC broadcasts real-time traffic and weather information to a growing number of European drivers. Data messages are received silently, decoded by a TMC-equipped car radio or navigation system, and delivered visually or vocally in the driver's preferred language. Messages can be filtered down to those relevant to a particular trip; a TMC-enabled navigation system offers dynamic route guidance. For details visit http://www.tmcforum.com/.

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Other e-newsletters for transportation professionals:
TRB E-Newsletter from the Transportation Research Board: http://gulliver.trb.org/news/.
Transportation Communications Newsletter: http://groups.yahoo.com/group/transport-communications/.
CTS Research E-News from the University of Minnesota: http://www.cts.umn.edu/publications/enews/.

Designing for the Future

Value Engineering Gets Stalled Bridge Project Back on Track

When all bids came in over budget for the design and construction of a new segmental concrete bridge in Clearwater, Fla., a value engineering proposal from the construction contractor allowed the project to move forward. Changes in the bridge's substructure and superstructure reduced the number of drilled shafts required and lessened material costs. See http://www.pbworld.com/news_events/publications/network/issue_57/57_13_adamsw_memorialcauseway.asp, and read more segmental bridge case studies in the latest issue of *PB Network* at http://www.pbworld.com/news_events/publications/network/issue_57/57_index.asp.

Sharing the Responsibility for Utility Pole Crashes

Utility pole crashes killed 1,100 people and injured more than 60,000 nationwide in 2000. A new TRB State of the Art Report, "Utilities and Roadside Safety," describes how state DOTs can work with utility organizations to reduce those numbers. Strategies include relocating poles, installing safety devices between poles and the roadway, and road design changes such as straightening sharp curves. See http://trb.org/publications/sar/sar_9.pdf. Courtesy of the TRB E-Newsletter.

Big-City Success in Context-Sensitive Design

If achieving a context-sensitive solution is challenging on an average transportation project, consider the obstacles faced by major cities: street grids built in the 18th or 19th century; multimodal systems; large, dense populations; complex layers of government. A new publication from New York University's Rudin Center for Transportation Policy & Management outlines five projects that overcame such difficulties to succeed. http://www.nyu.edu/wagner/transportation/research/research_docs/CSS%20report%20FINAL%202-9-04.pdf. Courtesy of the TRB E-Newsletter.

Draft Chapters of Intersection Safety Guide Available Online

Get an early look at a draft of the "Intersection Safety Toolbox" being developed by the Institute of Transportation Engineers. Chapter 4, "Designing for All Users," which addresses design elements for pedestrians, bicyclists and other nonvehicular users, was written by UW-Madison's David Noyce and Tim Gates. Topics of other chapters include geometric design and roundabout design. Readers are invited to submit comments on the chapters through April 15. See http://www.ite.org/safety/toolbox.asp. Courtesy of Transportation Communications Newsletter.

Mapping the Wildest Trail

The Rubicon Trail is a rugged, winding path in northern California whose upkeep had become an issue for local officials. The El Dorado County, Calif., DOT was charged with surveying the trail before the department took over its maintenance. Their equipment? A mobile GPS receiver mounted on a heavily modified SUV, which they often drove 2 mph or slower over and around giant boulders. Read more in *Professional Surveyor* magazine at http://www.profsurv.com/psarchiv.htm (click on "March 2004," then "Feature: The Rubicon Trail").

Prefab Bridge Resources Get New Home

In a new section of its Web site dedicated to prefabricated bridges, FHWA provides descriptions of more than 35 innovative prefab projects across the country, including specifications and detailed drawings where available. The projects are sorted by the problems they address and the elements they contain. The site also includes descriptions of ongoing research projects and links to completed publications. See http://www.fhwa.dot.gov/bridge/prefab/index.htm.

Construction and Materials Innovations

WisDOT And UW Test Composites On Waupun bridge

A report in *High Performance Composites* singles out a Route 151 bridge near Waupun, Wisconsin for its innovative composite-reinforced design. Partners on the project were WisDOT, FHWA, Alfred Benesch and Co. and researchers from the University of Wisconsin, led by Larry Banks. FHWA's Innovative Bridge Research and Construction program funded the project. The bridge incorporates composite deck panels of fiberglass and vinyl ester, fiber-reinforced polymer rebar, and bidirectional FRP pultruded bar grid to support the concrete structure. http://www.compositesworld.com/ct/issues/2004/February/366.

FRP Can Work On Steel Bridges, Too

Recent attention in this newsletter to fiber-reinforced polymers in bridge strengthening has focused on concrete. An Iowa State study shows that the application of FRP post-tensioning bars to a structurally deficient steel stringer bridge improves its live load carrying capacity, and recommends it in certain cases as an effective and practical solution to structural shortcomings. See http://www.ctre.iastate.edu/reports/frpposttension.pdf. (Courtesy *TRB E-Newsletter*.)

Iowa's PCC Center Reports On Latest In Concrete

The Winter 2004 edition of the PCC Center *Reporter* recently posted on line. One of the briefly described new developments was stringless paving of concrete. Edge elevation was better stringless, smoothness better with strings, and depth roughly the same between the methods. See http://www.pcccenter.iastate.edu/whatsnew/reporter_win04/research.pdf.

Software Improves Asphalt Crack Sealant Selection Process

FHWA's Turner-Fairbank Highway Research Center recently made the case for its version 2.1 of LTTPBind. This report presents data showing a 98-percent reliability rate for the software's sealant recommendations for several climates as varied as those in Alaska and Texas. http://www.tfhrc.gov/pavement/ltpp/reports/03080/index.htm. (Courtesy TRB E-Newsletter.)

New Tools Coming For Testing Asphalt Shear In Field

The Winter 2004 edition of TRB's *Ignition* features a brief article on research in Canada on new mobile equipment for field-testing of asphalt pavement shear properties. The prototype – called InSiSST (in situ shear stiffness testing) – will allow evaluation during construction, when correction is relatively easy. See http://trb.org/publications/ignition/ignition_5.pdf.

Synthesis Promotes Accelerated Testing For Construction, Maintenance

TRB recently posted the NCHRP Synthesis Report, *Significant Findings from Full-Scale Accelerated Pavement Testing*. The testing, this study finds, helps in construction, rehabilitation, and maintenance of pavements and structures significantly, saving crews time; it works well in evaluating pavement materials; and it nicely suits the evaluation of unconventional pavement structures. http://gulliver.trb.org/publications/nchrp/nchrp_syn_325.pdf.

When This Bridge Talks, Engineers Listen

What if a bridge could actually tell you it was wearing out? A bridge in Las Cruces, N.M., may soon be able to do just that. The high-tech optical sensors embedded in its concrete beams will relay information to New Mexico State University researchers about the performance of the bridge's design and materials, letting them track its structural soundness as it ages. See Miami Herald article at http://www.miami.com/mld/miamiherald/business/national/8087309.htm. Courtesy of Transportation Communications Newsletter.

Operating/Optimizing the System

Are FAST Lanes The Future?

In an effort to relieve congestion when additional funding just isn't available, Minnesota is looking to private industry for help. The state is planning to use FAST lanes (Freeing Alternatives for Speedy Transportation), built and managed by private companies in partnership with the state and paid for by motorists using non-cash, electronic technology. Link to the press release: http://www.dot.state.mn.us/fastlanes/
Find out who else is using FAST lanes at http://www.dot.state.mn.us/fastlanes/working.html.

DOT-Demolished Homes Recycled For Habitat

Through a new partnership, Ohio DOT and Habitat for Humanity will work jointly throughout Ohio to salvage materials from homes that are to be demolished as the result of road construction. Windows, doors, furnaces, sinks, and more will be removed prior to the demolition and resold to the public at the Habitat for Humanity's Build It Again Center Store. Profits will help build additional homes in Ohio. Link to the news release: http://www.dot.state.oh.us/news/2004/01-06-04.htm

Snow Removal Benefits – Compared to What?

Winter storm maintenance is generally understood to be beneficial, but there is little analytical information upon which to base trade-offs between winter maintenance investments and other transportation investments. A current research project at Iowa's Midwest Transportation Consortium will research and document the benefits of winter storm maintenance on intercity routes moving significant commercial traffic. Look for results very soon—May 2004. See http://www.ctre.iastate.edu/mtc/projects/2003-01.htm

Ramp Meters Make A Difference

A recent Colorado DOT study showed that ramp metering in Denver had a positive effect on traffic flows. Travel times were reduced on main arteries by up to two minutes and speeds increased by up to 31 percent. A more extensive study in Minnesota showed that ramp metering resulted in an annual savings of 40 million dollars to the Twin Cities traveling public. See Colorado DOT's *Trip Quarterly:* http://www.cotrip.org/cotrip_quarterly/current/news3.htm

Roadside Plants to Help Grow an Economy

Illinois roadsides are about to get a makeover. The Wildflowers of Illinois program, set to begin this spring, will utilize existing roadside enhancement and maintenance funding to plant native wildflowers and prairie plants in place of manicured turf along roadsides. Part of the State Beautification Initiative, the program is intended to foster economic development and tourism, promote responsible stewardship, encourage environmental understanding and reduce roadside maintenance costs. http://dot.state.il.us/wildflower/default1.html

Pavement Preservation Resources Offer "How-To" Guidance

Looking for policies and guidance on pavement preservation? This article provides a quick overview of the many reputable resources available to transportation professionals on this topic. You'll find technical information and practices from around the country, innovative funding approaches, and step-by-step guidance. See the March 2004 *Focus:* http://www.tfhrc.gov/focus/mar04/02.htm

New Salt Shed Door Wins Praise

Equipment operators at Iowa's DOT took problems into their own hands when faced with an unmanageable salt shed door. Working from a basic canvas door, the men designed and installed an innovative door that lifts easily, allows for full access, and saved the DOT a bundle. See Iowa's *Technology News*: http://www.ctre.iastate.edu/pubs/tech_news/2004/jan-feb/salt_door.pdf

Safe Travel/Smart Travel

ITS Adds Muscle To Wisconsin Transportation Security

Increasingly, ITS is assuming a more active role in transportation security. In Wisconsin, ITS technology solutions will help reduce the threat to the transportation infrastructure by making use of motion detector installations, 511 traveler information and other technologies. From the ITS Midwest *Express Lanes* newsletter, Page 4: http://www.itsmidwest.org/pdfs/2004MarchNewsletter.pdf.

Rumble Strips For Safety

The majority of information presented on FHWA Safety's recently inaugurated Rumble Strips Web site addresses the crucial role shoulder rumble strips play in keeping drowsy and distracted drivers on the road. The site is interactive, and allows visitors to contact rumble strip experts for advice and join in discussion groups. Site link: http://safety.fhwa.dot.gov/programs/rumble.htm.

Evaluating The Benefits Of An Intelligent Freeway Management System

As an increasing number of ITS systems are deployed around the nation, the need is rising to determine the benefits of these systems and justify their cost expenditures. The Columbus Metropolitan Freeway Management System Effectiveness Part 2 study will analyze the impact of Phase I of this new intelligent freeway management system on the region. From TRB's Research in Progress: http://rip.trb.org/browse/dproject.asp?n=9328.

Study: Kentuckians Shoulder Cost Of Road Safety Shortfalls

A new report from The Road Information Program (TRIP) looks at road and bridge conditions, traffic safety and congestion levels in Kentucky, and the cost to motorists who drive on inadequate roads. TRIP estimates that the safety cost of roads that lack desirable safety features in Kentucky is approximately $1 billion per year, or $373 per motorist. View the report: http://www.tripnet.org/KentuckyStudyMar2004.PDF.

Research Supports The Effectiveness Of Electronic Stability Control

First-of-its-kind testing via NHTSA's national advanced driving simulator confirms that Electronic Stability Control can prevent crashes and save lives. http://biz.yahoo.com/prnews/040308/nym036_1.html.

Banking On ITS To Save Lives And Time

The New York State DOT and the New York State Police have partnered to implement a high-tech regional transportation management center that will utilize ITS technologies to inform travelers and improve highway safety and mobility in the Hudson Valley. Link to the Hudson Valley Transportation Management Center Web site at: http://www.hudsonvalleytraveler.com/perl/home.pl.

Traffic Calming Measures For Village Entryways

Little if any work has been done on slowing traffic on arterials going 55 to 45 mph as it enters a village with speeds of 35 mph or less. This study will evaluate the effectiveness of using common highway materials including guardrail, curb and plant material to construct a permanent entryway into a village. From TRB's Research in Progress: http://rip.trb.org/browse/dproject.asp?n=9304.

New Hope For Parking-Challenged Drivers

Intelligent Parking Assist utilizes an electrically operated power steering system and back-up guide monitor technology to steer for drivers performing difficult parking maneuvers in tight and restrictive spaces. http://biz.yahoo.com/prnews/040308/dem006_1.html.